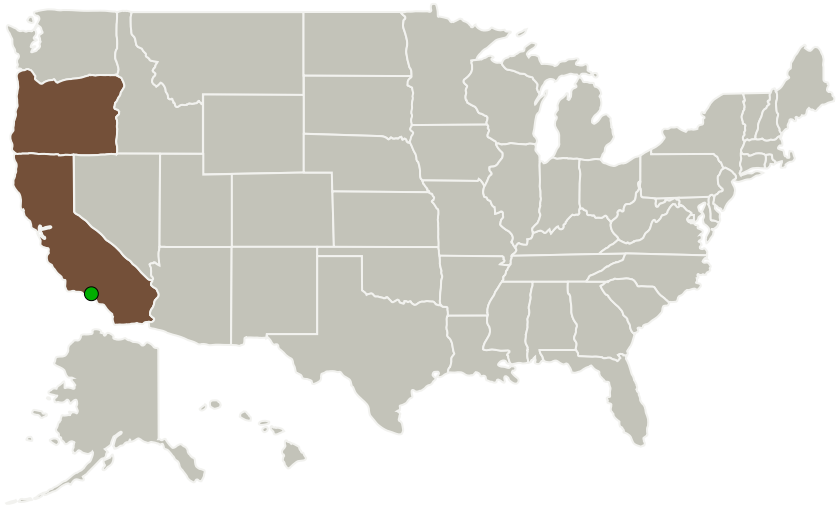
Venus Altitude Cycling Balloon, Phase I

Completed Technology Project (2014 - 2014)

Project Introduction

The ISTAR Group (IG) and team mate Thin Red Line Aerospace (TRLA) propose a Venus altitude cycling balloon (Venus ACB), an innovative superpressure balloon architecture that is ideally suited to cloud level mission parameters and to incorporation of a variety of buoyancy control mechanisms that will enable significant altitude cycling capability. The 5.5 meter diameter vessel is similar to the dimensions contemplated for higher altitude Venus missions. The pro posse Venus ACB balloon platform is based on TRLA's proprietary Ultra High Performance Vessel (UHPV). The attributes that set UHPV apart in its unique ability to address the fundamental challenges confronting a cloud level Venus balloon mission capable of significant altitude cycling are described in detail for these seven innovative design elements: 1. Strongest, lightest weight balloon option 2. Balloon fabrication is easier, less expensive, more accurate and highly reproducible 3. Greater performance predictability reduces FOS, which reduces mass 4. Standardized fabric and scalability to size 5. Lighter weight fabric 6. Strongest balloon/polar bulkhead integration 7. Potential for balloon-parachute hybrid vehicle

Primary U.S. Work Locations and Key Partners



Venus Altitude Cycling Balloon Project Image

Table of Contents

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Organizations Performing Work	Role	Type	Location
ISTAR	Lead Organization	Industry	BEND, Oregon
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations	
California	Oregon

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137528)*

Images

Project Image
Venus Altitude Cycling Balloon Project Image
(https://techport.nasa.gov/image/128378)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
ISTAR

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

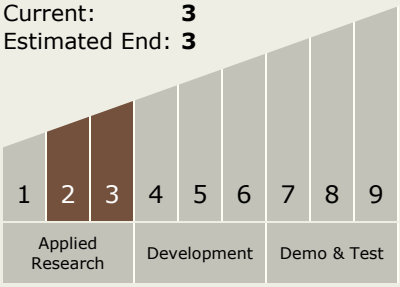
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Steven E Peterzen

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.7 Special Materials

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System